

REMARKS

Upon entry of this amendment, claims 1-10 and 39 are pending. Claim 1 has been amended. Claim 39 has been added.

Support for claim 39 appears at least at claims 1, 4, 5, 6, 7, 8, and 9, as well as at p. 12, ¶4.

Improper Rejection

In taking up an amended application for action, the Office should note in every letter all the requirements outstanding against the application. MPEP §707.07(e). Every point in the prior action which is still applicable must be repeated or referred to by the Office, to prevent the implied waiver of the requirement. MPEP §707.07(e). And if the rejection is repeated, the Office must make reference to Applicant's traverse and answer the substance of it. MPEP §707.07(f).

In the present application, the Office rejected, in a final Office Action dated December 15, 2004, claims 1-10 under 35 USC §103 as unpatentable over Pendalwar et al., US Patent 5,716,421 ("Pendalwar") in light of Spotnitz et al., US Patent 6,322,923 and Gies et al., US Patent 5,665,265. In Applicant's response of March 15, 2005, filed pursuant to an Request for Continued Examination, the above §103 rejection was traversed. The Office's subsequent Office Action of April 4, 2005, contained three new rejections, but did not repeat any prior rejections, as required under MPEP §707.07(e) (see MPEP §707.07(f)). Similarly, the Office's following final Office Action of September 23, 2005 contained one new rejection, but did not repeat any prior rejections. Applicants were understandably led to believe that their traversal of March 15, 2005 was succesful in removing the §103 rejection over Pendalwar in light of Spotnitz and Gies.

Despite having not repeated, or even referred to, the §103 rejection of December 15, 2004 since the date of that action, the Office has now ressurected that same rejection in the present Office Action of June 6, 2006. Because the Office failed to note the rejection as outstanding, failed to repeat the rejection, and failed to answer the substance of Applicants argument, as required under MPEP §§ 707.07(e), (f), the Office has impliedly accepted Applicant's previously filed traverse of the rejection as persuasive and has waived its right to re-assert such rejection.

Claim Rejections under 35 U.S.C. § 103

Claims 1-10 are rejected under 35 U.S.C. §103 as being unpatentable over Pentalwar in light of Spotnitz and Gies. While Applicant believes the prior traverse of record, filed March 15, 2005, was sufficient to overcome the rejection, and as described above, was led to believe the Office had not maintained such rejection, Applicant these further remarks directed to the substance of the rejection. Applicant (again) respectfully traverses and requests reconsideration and withdrawal of this rejection.

To establish a prima facie case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations; there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; and there must be a reasonable expectation of success. MPEP § 2143.

Claim 1 requires, inter alia, a solid electrolyte battery with a solid electrolyte, of thickness of from 5 μm to 19 μm , comprising a mixture of a polymer and a swelling solvent present in a ratio of from 1:5 to 1:10; and a separator comprising a polyolefin porous film having a thickness of from 5 μm to 15 μm and a volume porosity of from 25% to 60%.

Pentalwar does not disclose or suggest a solid electrolyte battery with all the requirements of claim 1. For example, Pentalwar does not disclose or suggest a solid electrolyte a mixture of a polymer and a swelling solvent present in a ratio of from 1:5 to 1:10; Pentalwar does not disclose or suggest a solid electrolyte of 5 μm to 19 μm thickness; Pentalwar does not disclose or suggest a separator with a thickness of from 5 μm to 15 μm ; and Pentalwar does not disclose or suggest a separator with a volume porosity of from 25% to 60%.

The Office asserts that the ratio of polymer to solvent is a result-effective variable because one of ordinary skill would recognize the ratio of polymer to solvent will effect the solubility and gelation of the polymer with the solvent. First, such assertion is made without supporting documentary evidence. Official notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known. MPEP §2144.03(A). Assertions of technical facts in the areas of specific knowledge of the prior art must always be supported by citation to some reference work

recognized as standard in the pertinent art. MPEP §2144.03(A). Second, as disclosed in the present application, the ratio of polymer to solvent in claim 1 provides optimal liquid holding performance of the matrix polymer in conjunction with optimal ion conductivity of the gel electrolyte (see p. 14, ¶3-4). A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. MPEP §2144.05(II)(B). The Office merely alludes to an “effect” on solubility and gelation without indicating what recognized result the optimization of the ratio of polymer to solvent should achieve. As such, the Office has failed to demonstrate the obviousness of the ratio of polymer to solvent in claim 1.

Spotnitz does not disclose or suggest a solid electrolyte battery with all the requirements of claim 1. For example, Spotnitz does not disclose or suggest a solid electrolyte a mixture of a polymer and a swelling solvent present in a ratio of from 1:5 to 1:10; and Spotnitz does not disclose or suggest a solid electrolyte of 5 µm to 19 µm thickness.

And **Gies** does not disclose or suggest a solid electrolyte battery with all the requirements of claim 1. For example, Gies does not disclose or suggest a solid electrolyte a mixture of a polymer and a swelling solvent present in a ratio of from 1:5 to 1:10; Gies does not disclose or suggest a solid electrolyte of 5 µm to 19 µm thickness; Gies does not disclose or suggest a separator with a thickness of from 5 µm to 15 µm; and Gies does not disclose or suggest a separator with a volume porosity of from 25% to 60%.

The Office asserts that an electrolyte thickness of about 5 to 19 microns is conventional in the art, as evidenced by Gies’ disclosure of 20 micron thick dip-coated PVDF layers. But claim 1 requires the entirety of the solid electrolyte (i.e., not just a PVDF matrix polymer component of the electrolyte) to have a thickness of from 5 µm to 19 µm. According to Geiss, the 20 micron PVDF layer was then “swollen in PC/EC/LiPF₆ (1M) electrolyte active species” (col. 4, ln. 48-49). Thus, the entirety of the electrolyte layer is by necessity thicker than the 20 microns asserted by the Office. Geiss does not appear to disclose sufficient information to even estimate the thickness of the resulting electrolyte layer. Thus, Geiss does not teach or suggest a solid electrolyte of 5 µm to 19 µm thickness.

The Office further asserts that the electrolyte thickness requirement of claim 1 is only slightly different than Geiss. But as explained above, the Office cannot determine with any

reasonable certainty the thickness of the electrolyte layer in Geiss, and thus, cannot support the assertion the thickness is only slightly different.

Because the cited references do not teach or suggest all required elements of claim 1, a prima facie case of obviousness over such claim has not been established. The above argument applies equally to claim 1 and claims dependent thereon, such as claims 2-10.

Furthermore, dependent claims have further patentable features. When issuing a rejection, the Office must specify the pertinence of each reference to each rejected claim. See MPEP §706; 37 CFR 1.104(c). In the current action, the Office has failed to demonstrate whether the cited references teach or suggest the features required by claims 6, 7, and 10. Claim 6 requires that the solid electrolyte to further contain vinylene carbonate and/or 2,4-difluoroanisol. Claim 7 requires that the solid electrolyte to further contain vinylene carbonate and 2,4-difluoroanisol at not greater than 5% wt. of the overall weight of the electrolyte. Claim 10 requires that the gel electrolyte comprise a copolymer of polyvinylidene fluoride and polyhexafluoropropylene such that polyhexafluoropropylene is contained in a quantity greater than 8%. The present rejection fails to make reference to *any* of these requirements. Because the Office has not demonstrated how the cited references teach all features of these claims, the Office has not satisfied a prima facie case of obviousness with respect to these claims.

The issuance of a subsequent *final* Office action would not be proper until after the Office apprises Applicant of the basis for rejection of claims 6, 7, and 10. Before final rejection is in order a clear issue should be developed between the examiner and applicant in a prior action where the invention as disclosed and claimed was thoroughly searched and the references fully applied; and in reply to this action the applicant had the opportunity to amend with a view to avoiding all the grounds of rejection. MPEP §706.07. In this case, the Office has failed to fully apply the references so as to apprise Applicant of the basis for rejection of various claims, such as claims 6, 7, and 10, and, as a result, Applicant has not had opportunity to amend in view of such rejections. Thus, a subsequent final rejection is not proper.

CONCLUSION

Applicant respectfully requests withdrawal of the rejections and believes that the claims as presented represent allowable subject matter. If the Examiner desires, Applicant welcomes a telephone interview to expedite prosecution. Applicant believes there is no fee due at this time. However, the Commissioner is hereby authorized to deduct any deficiency or credit any overpayment to Deposit Account No. 19-3140.

Respectfully submitted,

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